

**In vitro repair of three-unit fiber-reinforced composite FPDs.**

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**PURPOSE:** Clinical damage, such as the fracture or abrasion of composite veneers, may cause the loss of a fixed partial denture (FPD). Intraoral methods may help in repairing and therefore lengthening the life span of the restoration. The aim of this in vitro study was to evaluate an intraoral method of repairing fractured FPDs made of two different fiber-reinforced composite framework systems. **MATERIALS AND METHODS:** Shear bond strengths of a composite between two different fiber-reinforced composite frameworks were determined after five different mechanical surface treatments. A silicate-silane coating intraoral air-abrading system provided the most reliable bond strength values and was therefore used for treatment for the following veneer repair. The repair of 24 three-unit posterior FPDs was performed using a restorative composite resin. All FPDs were examined after simulating clinical service using thermocycling and mechanical loading. Fracture forces were determined for original FPDs and for FPDs after simulated intraoral repair. **RESULTS:** The fracture strength of all original FPDs was about 900 N. After repair, a maximum decrease in strength of about 15% was determined. FPDs that were extremely damaged by cutting the framework showed the lowest results, with values of about 450 N. **CONCLUSION:** The repair of the fractured veneer of fiber-reinforced composite FPDs provided good results and therefore may lengthen the life span of damaged FPDs. The repair of the fractured frameworks showed good results but can only be recommended for limited temporary use.

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